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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/553,291 Confirmation No.: 8630
Applicant : Mary J. EATON
Filed : October 14, 2005
Title : ISOLATED/CLONED HUMAN NT2 CELL LINES
EXPRESSING SEROTONIN AND GABA
Group Art Unit : 1647
Examiner :
Atty. Docket No. : US 1442/05(VA)
Date : August 16, 2006

SECOND
INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Pursuant to 37 CFR 1.56 and 1.97-1.98, Applicant(s) note(s) herewith various reference(s) for the Examiner's consideration. The references include those cited on pages 33-39 of the application. (It is noted herewith that Reference No. 43, Yezierski RP, Liu S, Ruenes GL, Kajander KJ. Behavioral and pathological characteristics of a central pain model following spinal injury. VIIIth World Congress on Pain 1996, is not readily available.)

The Examiner is respectfully requested to review and officially consider and make the reference(s) of record before issuing the next Office Action in connection with this case.

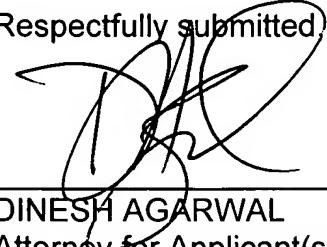
A completed Form 1449B/PTO listing the reference(s) thereon is enclosed herewith. Only the copy(ies) of foreign patent documents and non-patent literature, if applicable, is/are enclosed. The Examiner is respectfully requested to return an initialed copy of Form 1449B/PTO along with the next communication in connection with this case.

It is believed that no fee is due for this submission. Should that determination be incorrect, however, the Commissioner is hereby authorized to charge any deficiencies, or credit any overpayment, to our Deposit Account No. 01-0433, and notify the undersigned in due course.

Appl. No.: 10/553,291
Second Information Disclosure Statement dated August 16, 2006

Should the Examiner have any questions or wish to discuss further this matter,
please contact the undersigned at the telephone number provided below.

Respectfully submitted,



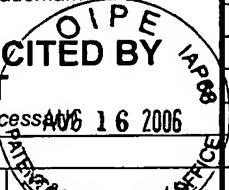
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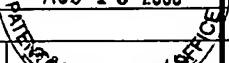
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		Berg-Johnsen J, Roste G, Solgaard T, Lundar T. Continuous intrathecal infusion of baclofen. A new therapeutic method for spasticity. Tidsskr Nor Laegeforen 1998;118: 3256-3260.	
		Kuraishi Y, Hirota N, Satoh M, Takagi H. Antinociceptive effects of intrathecal opioids, noradrenaline and serotonin in rats: mechanical and thermal algescic tests. Brain Res 1985;326: 168-171.	
		Fakhoury T, Abou-Khalil B, Blumenkopf B. EEG changes in intrathecal baclofen overdose: a case report and review of the literature. Electroencephalogr Clin Neurophysiol 1998;107: 339-342.	
		Postma TJ, Oenema D, Terpstra S, Bouma J. Cost analysis of the treatment of severe spinal spasticity with a continuous intrathecal baclofen infusion system. Pharmacoeconomics 1999;15: 395-404.	
		Zed PJ, Stiver HG, Devonshire V, Jewesson PJ. Continuous intrathecal pump infusion of baclofen with antibiotic drugs for treatment of pump-associated meningitis. Case report. J Neurosurg 2000;92: 347-349.	
		Gock SB, Wong SH, Stormo KA, Jentzen JM. Self-intoxication with morphine obtained from an infusion pump. J Anal Toxicol 1999;23: 130-133.	
		Sauter K, Kaufman H, Bloomfield S, Cline S. Treatment of high-dose intrathecal morphine overdose. case report. J Neurosurg 1994;81: 143-146.	
		Wu CL and Patt RB. Accidental overdose of systemic morphine during intended refill on intrathecal infusion device. Anesth Analges 1992;75: 130-132.	
		Winnie AP, Pappas GD, DasGupta TK, Wang H. Subarachnoid adrenal medullary transplants for terminal cancer pain. Anesthesiology 1993;79: 644-653.	
		Wu HH, Wilcox GL, McLoon SC. Implantation of AtT-20 or genetically modified AtT-20/hENK cells in mouse spinal cord induced antinociception and opioid tolerance. J Neurosci 1994;14: 4806-4814.	

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		Eaton MJ, Dancausse HR, Santiago DI, Whittemore SR. Lumbar transplants of immortalized serotonergic neurons alleviates chronic neuropathic pain. Pain 1997;72: 59-69.	
		Eaton MJ, Plunkett JA, Martinez MA, Lopez T. Transplants of neuronal cells bio-engineered to synthesize GABA alleviate chronic neuropathic pain. Cell Transplant 1999;8: 87-101.	
		Cejas PJ, Martinez M, Karmally S, McKillop M. Lumbar transplant of neurons genetically modified to secrete brain-derived neurotrophic factor attenuate allodynia and hyperalgesia after sciatic nerve constriction. Pain 2000;86: 195-210.	
		Eaton MJ and Whittemore SR. Autocrine BDNF secretion enhances the survival and serotonergic differentiation of raphe neuronal precursor cells grafted into the adult rat CNS. Exp Neurol 1996;140: 105-114.	
		Andrews PW, Damjanov I, Simon D, Banting GS. Pluripotent embryonal carcinoma clones derived from human teratocarcinoma cell line Tera-2. Lab Invest 1984;50: 147-162.	
		Pleasure SJ, Page C, Lee VMY. Pure, postmitotic, polarized human neurons derived from NTera 2 cells provide a system for expressing exogenous proteins in terminally differentiated neurons. J Neurosci 1992;12: 1802-1815.	
		Borlongan CV, Tajima Y, Trojanowski JQ, Lee VMY. Transplantation of cryopreserved human embryonal carcinoma-derived (NT2N cells) promotes functional recovery in ischemic rats. Exp Neurol 1998;149: 310-321.	
		Trojanowski JQ, Kleppner SR, Hartley RS, Miyazono M. Transfectable and transplantable postmitotic human neurons: potential "platform" for gene therapy of nervous system diseases. Exp Neurol 1997;144: 92-97.	
		Kondziolka D, Wechsler L, Goldstein S, Meltzer C. Transplantation of cultured human neuronal cells for patients with stroke. Neurology 2000;55: 565-569.	
		Nelson PT, Kondziolka D, Wechsler L, Goldstein S. Clonal human (hNT) neuron grafts for stroke therapy: neuropathology in a patient 27 months after implantation. Am J Pathol 2002;160: 1201-1206.	

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		Eaton MJ, Frydel B, Lopez T, Nie X. Generation and initial characterization of conditionally immortalized chromaffin cells. <i>J Cell Biochem</i> 1999;79: 38-57.	
		Cheung WMW, Fu WY, Hui WS, Ip NY. Production of human CNS neurons from embryonal carcinoma cells using a cell aggregation method. <i>BioTechniques</i> 1999;26: 946-954.	
		Sarnat HB, Nochlin D, Born DE. Neuronal nuclear antigen (NeuN): a marker of neuronal maturation in early human fetal nervous system. <i>Brain Dev</i> 1998;20: 88-94.	
		Daadi MM, Saporta S, Willing AE, Zigova T. In vitro induction and in vivo expression of bcl-2 in the hNT neurons. <i>Brain Res Bull</i> 2001;56: 147-152.	
		Eaton MJ, Staley JK, Globus MYT, Whittemore SR. Developmental regulation of early serotonergic neuronal differentiation: the role of brain-derived neurotrophic factor and membrane depolarization. <i>Dev Biol</i> 1995;170: 169-182.	
		Bennett DJ, Gorassini M, Fouad K, Sanelli L. Spasticity in rats with sacral spinal cord injury. <i>J Neurotrauma</i> 1999;16: 69-84.	
		Siddall PJ, Yezierski RP, Loeser J. Pain following spinal cord injury: clinical features, prevalence, and taxonomy. <i>IASP Newsletter</i> 2000;3: 3-7 (13 pages).	
		Hargreaves K, Dubner R, Brown F, Flores C. A new and sensitive method for measuring thermal nociception in cutaneous hyperalgesia. <i>Pain</i> 1988;32: 77-88.	
		Yezierski RP, Liu S, Ruenes GL, Kajander KJ. Excitotoxic spinal cord injury: behavioral and morphological characteristics of a central pain model. <i>Pain</i> 1998;75: 141-155.	
		Abraham KE, McGinty JF, Brewer KL. The role of kainic acid/AMPA and metabotropic glutamate receptors in the regulation of opioid mRNA expression and the onset of pain-related behavior following excitotoxic spinal cord injury. <i>Neurosci</i> 2001;104: 863-874.	

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		Abraham KE and Brewer KL. Expression of c-fos mRNA is increased and related to dynorphin mRNA expression following excitotoxic spinal cord injury in the rat. <i>Neurosci Lett</i> 2001;307: 187-191.	
		Plunkett JA, Yu CG, Easton JM, Bethea JR. Effects of interleukin-10 (IL-10) on pain behavior and gene expression following excitotoxic spinal cord injury in the rat. <i>Exp Neurol</i> 2001;168: 144-154.	
		Abraham KE, McGinty JF, Brewer KL. Spinal and supraspinal changes in opioid mRNA expression are related to the onset of pain behaviors following spinal cord injury. <i>Pain</i> 2001;90: 181-190.	
		Abraham KE, Brewer KL, McGinty JF. Opioid peptide messenger RNA expression is increased at spinal and supraspinal levels following excitotoxic spinal cord injury. <i>Neurosci</i> 2000;99: 189-197.	
		Morrow TJ, Paulson PE, Brewer KL, Yezierski RP. Chronic, selective forebrain responses to excitotoxic dorsal horn injury. <i>Exp Neurol</i> 2000;161: 220-226.	
		Brewer KL and Yezierski RP. Effects of adrenal medullary transplants on pain-related behaviors following excitotoxic spinal cord injury. <i>Pain</i> 1998;79: 83-92.	
		Schwartz ED, Yezierski RP, Pattany PM, Quencer RM. Diffusion-weighted MR imaging in a rat model of syringomyelia after excitotoxic spinal cord injury. <i>Am J Neuroradiol</i> 1999;20: 1422-1428.	
		Yezierski RP, Santana M, Park SH, Madsen PW. Neuronal degeneration and spinal cavitation following intraspinal injections of quisqualic acid in the rat. <i>J Neurotrauma</i> 1993;10: 445-456.	
		Widerstrom-Noga EG, Felipe-Cuervo E, Broton JG, Duncan RC. Perceived difficulty in dealing with consequences of spinal cord injury. <i>Arch Phys Med Rehabil</i> 1999;80: 580-586.	
		Yezierski RP. Pain following spinal cord injury: the clinical problem and experimental studies. <i>Pain</i> 1996;68: 185-194.	

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		Bennett GJ and Xie Y-K. A peripheral mononeuropathy in rat that produces disorders of pain sensation like those seen in man. Pain 1988;33: 87-107.			
		Kim SH and Chung JM. An experimental model for peripheral neuropathy produced by segmental spinal nerve ligation in the rat. Pain 1992;50: 355-363.			
		Yezierski RP, Liu S, Ruenes GL, Kajander KJ. Behavioral and pathological characteristics of a central pain model following spinal injury. VIIth World Congress on Pain 1996;			
		Yezierski RP and Park SH. The mechanosensitivity of spinal sensory neurons following intraspinal injections of quisqualic acid in the rat. Neurosci Lett 1998;157: 115-119.			
		Smart D, Hirst RA, Hirota K, Grandy DK, Lambert DG. The effects of recombinant rat mu-opioid receptor activation in CHO cells on phospholipase C, [Ca ²⁺] _i and adenyl cyclase. Br J Pharmacol 1997; 120: 1165-1171.			
		Schumm MA, Castellanos DA, Frydel BL, Sagen J. Direct cell-cell contact required for neurotrophic effect of chromaffin cells on neural progenitor cells. Brain Res., 146 (1-2):1-13.(2003).			
		Schumm MA, Castellanos DA, Frydel BR, Sagen J. Enhanced viability and neuronal differentiation of neural progenitors by chromaffin cell co-cultute. Brain Res., 137(2):115-25(2002).			
		Schumm MA, Castellanos DA, Frydel BR, Sagen J. Improved neural progenitor cell survival when cogenerated with chromaffin cells in the rat striatum. Exp Neurol., 185(1):133-42 (2004).			
		Hama AT, Siegan JB, Herzberg U, Sagen J. 1. NMDA-induced spinal hypersensitivity is reduced by naturally derived peptide analog [Ser1]histogramin. Pharmacol Biochem Behav. 62(1):67-74 (1999).			
		Siegan JB, Hama AT, Sagen J. Suppression of neuropathic pain by a naturally-derived peptide with NMDA antagonist activity. Brain Res., 755(2):331-4 (1997).			

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		Siegan JB, Sagen J. A natural peptide with NMDA inhibitory activity reduces tonic pain in the formalin model. <i>Neuroreport.</i> , 8(6):1379-81 (1997).	
		Eaton MJ, Herman JP, Jullien N, Lopez TL, Martinez M, Huang J. Immortalized chromaffin cells disimmortalized with Cre/lox site-directed recombination for use in cell therapy for pain after partial nerve injury. <i>Exp Neurol.</i> 175(1):49-60 (2002).	
		Eaton MJ, Martinez M, Karmally S, Lopez T, Sagen J. Initial characterization of the transplant of immortalized chromaffin cells for the attenuation of chronic neuropathic pain. <i>Cell Transplant.</i> , 9(5):637-56 (2000).	
		NasiriNezhad F, Sagen J. NMDA antagonist peptide supplementation enhances pain alleviation by adrenal medullary transplants. <i>Cell Transplant.</i> , 14(4):203-11 (2005).	
		Hama A, Sagen J. Selective antihyperalgesic effect of [Ser ¹] histogram on complete Freund's adjuvant-induced hyperalgesia in rats. <i>PAIN</i> 95:15-21 (2002).	

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